8/10/09 Revision

Discharge Monitoring Report Manual

Kentucky Department for Environmental Protection, 300 Fair Oaks Ln., Frankfort, KY 40601

This manual was produced in partnership with the University of Kentucky's Environmental Research and Training Laboratories (ERTL), Kentucky Division of Water and the Kentucky Division of Compliance Assistance. This manual serves as a guidance document and is not a substitute for reading and understanding your KPDES permit. For questions regarding this manual, please contact the Division of Compliance Assistance at 800-926-8111 or envhelp@ky.gov.

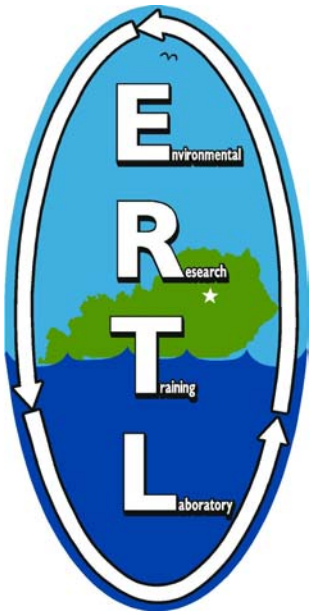


TABLE OF CONTENTS

Chapter 1: Overview

KPDES

The Clean Water Act (CWA) established the National Pollutant Discharge Elimination System (NPDES) that required every facility discharging water into receiving waters of the U.S. to possess a permit. These NPDES permits set limitations on how much of a given pollutant can be released into a body of water. Under the NPDES program, monitoring of the effluent is the responsibility of the permit holder. The data collected during monitoring is recorded on a document referred to as a discharge monitoring report (DMR), which must be submitted to the state by the permit holder. The Kentucky Division of Water uses this data to determine compliance with permit conditions. The Kentucky Division of Water is also responsible to the U.S Environmental Protection Agency (EPA) for entering the DMR data into the federal permit compliance system. This data is used by the EPA for oversight over the Kentucky Permitting Program. The Kentucky Division of Water (DOW) is responsible for the administration of the NPDES program in the state of Kentucky, and, as a result, the program in Kentucky is referred to as the KPDES.

Purpose

This document is designed to serve as a guide that explains the DMR completion procedure. Since each DMR contains limits and information specific to an individual permit holder, the responsible persons completing the DMR needs to be certain that they are using the correct DMR, and that the information on the DMR matches their permit before beginning the completion process. The examples provided in this document will be similar to any DMR forms, but differ in the limits for each parameter as these are specific to each facility.

How to Use This Document

Throughout this document, you will see references to boxes containing numbers like the one shown here. **#** These boxes link the explanation or definition to an example illustrated in Appendixes B and C. Appendix B shows the data and calculations sheet that was used to complete the example DMR located in Appendix C. Reference

Appendix B to see the source of the data in the example, and reference Appendix C to see how the data would be entered onto the DMR.

CHAPTER 2: DMR Instructions

Preprinted DMRs are sent out quarterly to permittees and should correspond to your permit requirements. Check to make sure that your preprinted DMR matches your KPDES permit. The permit is a legally binding document, and the DMR should reflect the permit conditions. If there are discrepancies, contact the Surface Water Permits, Permit Support Section, within the Division of Water.

DMR Parts

The numbers below correspond to the numbers found on the example DMR form on the following page

1. Permittee Name and Address – Verify that the correct name and mailing address appear at the top left-hand corner of the DMR. For corrections, please contact the DOW Surface Water Permits Branch, Permit Support Section Supervisor, at 502-564-8158, ext. 4923.

2. Facility Name and Facility Location – Verify that the facility name and location are correct as they appear on the DMR. For corrections, please contact the DOW Surface Water Permits Branch, Permit Support Section Supervisor, at 502-564-8158, ext. 4923

3. Permit Number – Confirm that the correct KPDES permit numbers appear in the permit number block. This number must be prominently displayed on any correspondence regarding KPDES permit issues. For corrections, please contact the DOW Surface Water Permits Branch, Permit Support Section Supervisor, at 502-564-8158, ext. 4923.

4. Discharge Number – The discharge number refers to a particular pipe or outfall. Each DMR corresponds to a specific outfall. Make sure you are recording data for the correct outfall on your DMR.

5. No Discharge – If there is no discharge for the monitoring period, place a "C" in the no discharge box in the upper right-hand corner of the DMR or use one of the No Data Indicator Codes (NODI) listed below:

NODI Codes

B	Below Detect Limit/No Detect
C	No Discharge
D	Lost Sample
E	Analysis Not Conducted
F	Insufficient Flow for Sampling
G	Sampling Equipment Failure
K	Flood Disaster

“2”	Operations Shutdown
“5”	Frozen Conditions
“8”	Other: Please include letter of explanation
“9”	Monitoring Not Required for This Period

It is important to note that you should never force a discharge in order to take a sample during the monitoring period. The intent of the monitoring program is to be representative of the operations of the wastewater treatment system, such as for individual home units.

6. Parameters – Verify that each parameter specified in the permit is listed one per box in the far left column of the form. For corrections, please contact the DOW Surface Water Permitting Branch, Permit Support Section Supervisor at 502-564-8158, ext. 4923.

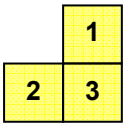
7. Monitoring Period – The first and last days of the monitoring period are displayed here in a YEAR MO DAY format. Since the monitoring period for each permit is different, the permittee should check to be certain that the monitoring period specified on the DMR corresponds to the permit requirement. For corrections, please contact the DOW Surface Water Permits Branch, Permit Support Section Supervisor, at 502-564-8158, ext. 4923

8. Permit Requirement –Verify each permit requirement for each parameter under Quality and Quantity as specified in the permit. For corrections, please contact the DOW Surface Water Permitting Branch, Permit Support Section Supervisor at 502-564-8158, ext. 4923.

9. Sample Measurement – Enter the “sample measurement” data for each parameter under “Quantity” and “Quality” in the units pre-printed on the form or specified in the permit.

- Average is normally the arithmetic average (geometric mean for bacterial parameter) of all sample measurements for each parameter obtained during the monitoring period. **pH is never averaged.**
- Maximum and minimum are normally the high and low measurements obtained during the monitoring period.
- Take care to enter sample measurement data in the correct columns. For example, pH measurements are entered in the Minimum and Maximum columns. Dissolved Oxygen (D.O.) is entered in the Minimum column only.
- If the result of only one measurement is being reported, enter the same value in EVERY column for which limitations are specified in the permit.
- ALL sample measurement spaces not filled in with asterisks (*****) must be completed.

See Appendixes B and C



to see how to record pH and D.O. on the DMR.

- Never use the inequality symbols (< or >) when reporting a sample measurement. The federal database that records all of the information submitted on DMRs has the potential to flag a reported value with an inequality as a violation, even if no violation exists. To avoid this, rather than reporting an inequality, enter an appropriate NODI code or BMDL in the sample measurement box. The inequality should also be reported/explained in the comments section.

10. Number of Exceptions (NO. EX) – The "NO. EX" field indicates how many times a limit was not met during the monitoring period. To complete this field, count and then enter the number of sample measurements that do not conform to the maximum (or minimum) limit for the parameter for both "Quantity or Loading" and "Quality or Concentration". Enter "0" in this field if there were no exceptions during the monitoring period. Do not count the results for the average "Quantity or Loading" and "Quality or Concentration" as exceptions.

Some permits and some parameters specify the maximum (or minimum) results as "weekly averages" instead of a "daily maximums". In these instances, count and report the number of "weekly averages" that did not conform with the permit limit, not the number of individual sample results.

11. Frequency of Analysis – Enter the actual frequency of sampling during the monitoring period. For example, enter "CONT" for continuous monitoring, "1/7" for once per week, "1/30" for once per month and "1/90" for once per quarter.

12. Sample Type – Enter the method used to collect the actual sample, such as "GRAB" for individual samples or "24HC" for 24-hr composite.

13. Name / Title of principal executive officer or authorized agent – The name and title of the responsible person should be printed at the bottom of the form.

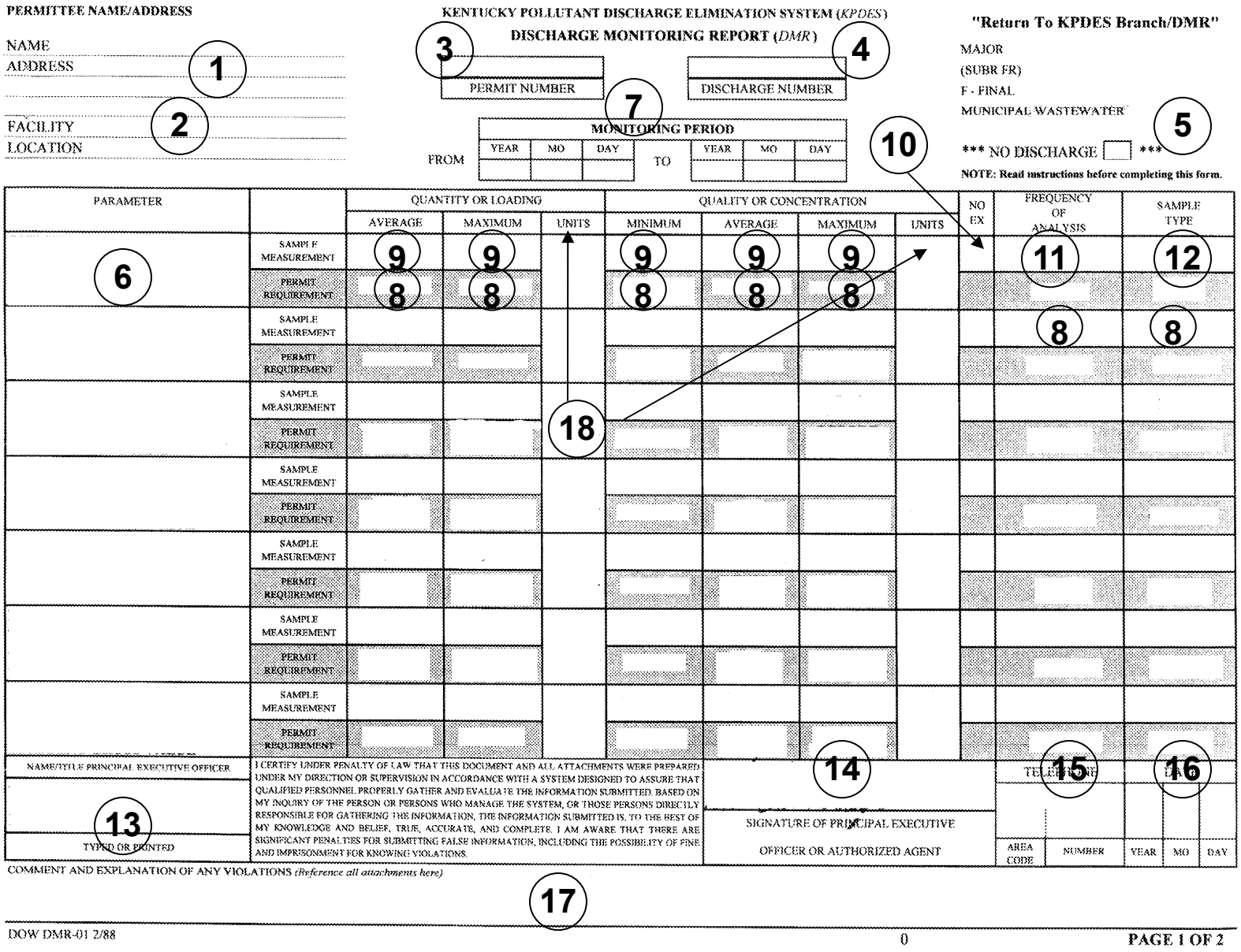
14. Signature – Every page of the DMR must be signed by the Principal Executive Officer or Authorized Agent. Questions on who can sign the DMR are addressed in Chapter 3: Frequently Asked Questions.

15. Telephone – The telephone number of the Principal Executive Officer or Authorized Agent must be printed in this section.

16. Date – This must be the actual date that the DMR is signed by the Principal Executive Officer or Authorized Agent, certifying and authenticating the data submitted on the DMR.

17. Comments and Explanation of Any Violations – This block is required to explain and discuss any permit violations that occurred during the monitoring period. If you require additional space, please attach a brief explanation. The explanation in both the comments box and any attachments should detail the cause and corrective actions taken in addition to referencing each violation by date.

18. **Units** -The units reported on the DMR must match those listed in the permit. If the actual measured units are different from those listed in the permit, then the units **must** be converted.



PERMITTEE NAME/ADDRESS

NAME
ADDRESS (1)

FACILITY (2)
LOCATION

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM (*KPDES*)

DISCHARGE MONITORING REPORT (*DMR*)

(3) PERMIT NUMBER

(4) DISCHARGE NUMBER

"Return To KPDES Branch/DMR"

MAJOR
(SUBR FR)
F - FINAL
MUNICIPAL WASTEWATER

(5) *** NO DISCHARGE ☐ ***

NOTE: Read instructions before completing this form.

(7) MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM				TO			

(10)

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
(6)	SAMPLE MEASUREMENT	(9)	(9)	(18)	(9)	(9)	(9)			(11)	(12)
	PERMIT REQUIREMENT	(8)	(8)		(8)	(8)	(8)				
	SAMPLE MEASUREMENT									(8)	(8)
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

(13)

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

(14)

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE (15)

AREA CODE | NUMBER

DATE (16)

YEAR | MO | DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

(17)

DOW DMR-01 2/88

0

PAGE 1 OF 2

Chapter 3: Frequently Asked Questions

1. What if the person responsible for filling out the DMR has changed or the facility has changed ownership? Should this be corrected on the DMR form itself?

If the person responsible for the DMR has changed, a letter should be sent to the DOW Surface Water Permits Branch, Permit Support Section.

If the facility has changed ownership, a "Change in Ownership Certificate" form must be filled out and submitted to the DOW Surface Water Permits Branch, Permit Support Section, listed in the back of this document. The proper form can be found at:
http://www.water.ky.gov/homepage_repository/kpdes_permit_aps.htm

2. How do I report total residual chlorine if my analyzer's minimum detection limit is 0.02 mg/L?

For Total Residual Chlorine (TRC) where all samples are below minimum detection limits (BMDL), enter "BMDL" in the appropriate boxes. Where multiple samples contain a mixture of values, some of which are below minimum detection limits, the value of 0.02 mg/L shall be substituted for the BMDL sample measurements when conducting averaging calculations. The Division of Water accepts the use of TRC analyzers with a detection limit of 0.02 mg/L.

Example 1

Sample Number	Analysis Results	Average Calculation	DMR Values
1	<0.02 mg/L	0.02	
2	0.10 mg/L	0.10	
3	0.20 mg/L	0.20	0.20 mg/L Maximum
4	0.04 mg/L	0.04	
Average		0.09 mg/L	0.09 mg/L Average

Example 2

Sample Number	Analysis Results	DMR Values
1	<0.02 mg/L	
2	<0.02 mg/L	
3	<0.02 mg/L	BMDL for Maximum
4	<0.02 mg/L	
Average		BMDL for Average

3. How do I report for bacteriological analysis (fecal coliform and E-coli)?

You should report the nearest whole number multiplied by the dilution factor. If a sample contains colonies that are too numerous to count, it is your responsibility to conduct enough dilutions in these tests to obtain discrete ("real number") value. Reporting a non-numerical value, such as TNTC, is unacceptable because you cannot average non-numerical values. For samples in which subsequent dilutions do not produce a discrete value and are too numerous to count, report results as 60,000. You would also use this value in the geometric mean calculation.

- Never use the inequality symbols < or > when reporting a result. A numeric value or text, such as NODI codes, should be reported in the appropriate sample measurement boxes. The inequality should be reported/explained in the comments section.
- Report a whole number always for bacteriological analysis and NEVER USE DECIMALS.
- In the geometric mean calculations, the colony count cannot be 0. You must use the whole number value of 1 in place of 0 because mathematical laws state that you cannot use 0 in geometric mean calculations.

4. What are monthly and weekly averages?

- Monthly averages are the average of all samples measurements taken during the calendar month.
- Weekly averages are the average of all sample measurements taken during the weeks as described below.
    - Week 1: Calendar days 1-7
    - Week 2: Calendar days 8-14
    - Week 3; Calendar days 15-21
    - Week 4: Calendar says 22-28

Extra days beyond day 28 are eliminated from the weekly average calculation.

5. How do I calculate percent removal for BOD and TSS?

The monthly average percent removal is calculated using the monthly average influent concentration and the monthly average effluent concentration. See Appendix A for calculation example.

6. What is the difference between arithmetic and geometric average?

Arithmetic average**:** An arithmetic average is calculated by adding numbers and then dividing by the total number of figures. For example: the average of numbers 2, 3, 4 is 9 divided by 3, with the result of 3.

Geometric average**:** Geometric average is a different calculation than arithmetic averages. Geometric averages are used to calculate bacteriological averages. A calculator capable of performing logarithmic functions is required.

See Appendix A for example calculations.

7. What are the guidelines for rounding numbers?

Rule 1. Select the digit you want to round and look to the right side of it. If the digit is 0,1,2,3 or 4, do not change the rounding digit. All digits that are on the right-hand side of the requested rounding digit will become 0,

Rule 2. Select the digit you want to round and look to the right of it. If the digit is 5,6,7, 8 or 9, your rounding digit rounds up by one number. All digits that are on the right-hand side of the requested rounding digit will become 0,

Rounding with decimals: When rounding numbers involving decimals, there are 2 rules to remember:

> **Rule 1.** Select the digit you want to round and look to the right side of it. If that digit is 4,3, 2 or 1, simply drop all digits to the right of it.
>
> **Rule 2.** Select the digit you want to round and look to the right side of it. If that digit is 5, 6, 7, 8 or 9, add one to the rounding digit and drop all digits to the right of it.

Source: http://math.about.com/od/arithmetic/a/Rounding.htm

8. What are the guidelines for significant digits?

Controlling the number of significant digits is a way of accurately reflecting the level of confidence people have with their calculations.

- A significant digit is any non-zero digit in a number. The number 123.678 has 6 significant digits.
- Zeros may or may not be significant. If they are to the left of the first non-zero number, they are not significant. For example, 0.0007 only has 1 significant digit.

- Zeros to the right of non-zero digits that are themselves to the right of the decimal are significant digits. For example, 0.000700 has 3 significant figures.
- Zeros between two non-zero numbers are significant. For example, 2008 has 4 significant figures.

Parameter	Maximum Significant Digits	Examples
Flow, MGD	4	0.266; 9.587; 45.23; 123.8
Biochemical Oxygen Demand (BOD) mg/L	Nearest whole number	6; 18; 258
Total Suspended Solids (TSS) mg/L	Nearest whole number	7; 22; 859
Ammonia Nitrogen, mg/L	3	0.233; 1.25; 24.8
Dissolved Oxygen, mg/L	2	0.99; 6.8; 12
pH, standard units	3	6.80; 7.22; 10.5
Fecal Coliform/ E. coli, colonies/100ml	Nearest whole number multiplied by the dilution factor	3; 243; 1200; 27,000
Total Residual Chlorine, mg/L	4	0.008; 0.010; 0.277; 1.002
Metals, often mg/L or µg/L, but units may vary	4	0.004; 0.062; 0.186; 2.348
Organic Chemicals	Case-by-case basis	

9. What should I do if I lost this month's DMR form?

If for any reason you do not have your DMR form, you should contact the DOW Surface Water Permits Branch, Permit Support Section, to have another DMR generated.

10. What results do I report if I sample more frequently than required by my permit?

Your permit lists the minimum frequency for taking and analyzing samples. Therefore, as long as samples are taken using correct methodology and analytical procedures and they are from places specified on your permit, they must be included in the calculation of DMR values. You should report this change in sampling frequency in the "Frequency of Analysis" block on the DMR form.

11. How do I correct an error in the data I've reported on a DMR form?

To correct an error in the data you've entered on the DMR form, cross out the old data, reenter the data above the old date and sign above the original signature.

All entries shall be made in red ink. Print the word “REVISED” at the top of the DMR. You should mention the reason for the correction in the “Comments” area at the bottom of the DMR or in a cover letter to your regional and state offices. This is especially important if this change occurs because of an error in the analytical process or data collection. Do not use white out to make corrections on your DMR form.

12. What are the most common errors made on DMRs submitted to the KY Division of Water (DOW)?

- Forgetting to print the name on the bottom left of the DMR form.
- Forgetting to sign the bottom right of the DMR form.
- Submitting photocopies or carbon copies of the DMR form. Only signed original copies are acceptable.
- Forgetting to explain in the Comments area or in an attachment why exceedances and resulting permit violations occurred.
- Forgetting to assure that DMR forms and permits match.
- Leaving DMR blanks empty.

13. Who can sign a DMR form?

The description of who can act as a signatory official on the DMR form is found in your permit and also in regulations at 40 CFR 122.22, 40 CFR 403.6(a)(2)(ii), 401 KAR 5:060 Section 9. Generally, such a person is responsible corporate official (for example, an officer of the corporation), partner, sole proprietor, or for a government entity, a principal executive officer or ranking elected official. See your permit for a complete description

14. Can signatory authority be delegated?

Yes, a duly authorized signatory official may also sign DMR forms. Permission must be given in writing from an authorized signatory official. The letter granting permission must specify an individual by name or a position having responsibility for the overall operation of the plant. This letter must be signed by an authorized signatory official. (40 CFR 122.22(b) contains further details). This information should be provided to the DOW Surface Water Permits Branch, Permit Support Section Supervisor.

15. Can photocopies of the DMR forms be submitted instead of the originals?

Only original signed copies can be submitted to the Division of Water Central Office. Your permit allows for photocopies to be submitted to the Division of Water Regional Offices with the same deadline as the original submission to Central Office.

16. What color ink should I use for completing my DMR?

Use only blue or black ink for fill in and signature. You may also choose to type in the information.

17. What is the difference between a grab, composite and 24 hour composite sample?

- Grab sample means: (a) For purposes of 401 KAR 5:045, a single instantaneous portion of the effluent; or (b) For purposes of 401 KAR 5:050 to 401 KAR 5:080, a single effluent portion that is not a twenty-four (24) hour composite sample.
- Composite sample means: (a) Not less than four (4) effluent portions collected at regular intervals over a period of eight (8) hours and combined in proportion to flow; (b) Not less than four (4) combined equal volume effluent portions collected over a period of eight (8) hours at intervals proportional to flow; (c) An effluent portion collected continuously over a period of twenty-four (24) hours at a rate proportional to the flow; or (d) An effluent portion consisting of a minimum of four (4) combined equal volume grab samples taken approximately two (2) hours apart.
- Twenty-four hour (24) composite sample means not less than twelve (12) effluent portions collected at regular intervals over a period of twenty-four (24) hours which are composited in proportion to flow.

18. How do I calculate flow if I do not have a flow meter?

If the facility does not have a flow meter, then a scientifically defensible method must be used to measure flow. These methods, though less accurate than a flow meter, can include the use of a bucket and timer or geometric calculations. If you are not sure if the flow measurement method you would like to use is scientifically defensible, you can submit a description of your proposed method to the Division of Water for their review and approval.

19. Can I submit my DMR electronically?

The U.S. Environmental Protection Agency (EPA) is working with states on the ability for permittees to submit DMRs electronically. It is anticipated that this will be available in 2011.

20. When do I submit my DMR?

It is important to submit your DMR on time. DMRs must be submitted on or before the deadline listed in the KPDES permit.

APPENDIX A: Calculations

How to Use This Appendix

In this appendix, you will see references to boxes containing numbers like the one # shown here. These boxes link the explanation or definition to an example illustrated in Appendixes B and C. Appendix B shows the data and calculations sheet that was used to complete the example DMR located in Appendix C. Reference Appendix B to see the source of the data in the example, and reference Appendix C to see how the data would be entered onto the DMR.

BOD and TSS Percent Removal

$$\% \text{ Removal} = \frac{\text{Monthly Avg. Influent Conc.} - \text{Monthly Avg. Effluent Conc.}}{\text{Monthly Avg. Influent Conc.}} \times 100$$

4

$$99\% = \frac{194 - 2}{194} \times 100$$

Geometric Mean Calculations

Formula for Calculating a Geometric Average:

$$\frac{\text{Log}(FCB_1) + \text{Log}(FCB_2) + \text{Log}(FCB_3) + \ldots \text{Log}(FCB_n)}{n} = \text{Log}_{avg}$$

Antilog(Logavg) = Geometric Averages

Where: Log(FCB) = logarithm of bacteriological colony count
n = number of samples

30-Day Geometric Average for Fecal Coliform (30-day data taken from Appendix B)

=(Log(184)+Log(25)+Log(10)+Log(14)+Log(3)+Log(6)+Log(10)+Log(7)+Log(3)+Log(3)+Log(3)+Log(3))/12

= 0.9015

Now take $10^{0.9015}$ to get the Geometric Average, which equals 7.970369

12

7-Day Geometric Average for Fecal Coliform (weekly data taken from Appendix B)

Period	Calculation	Geometric Average
July 1-7	$=10^{((Log(184)+Log(25)+Log(10))/3)}$	35.83048
July 8-14	$=10^{((Log(14)+Log(3)+Log(6))/3)}$	6.31636
July 15-21	$=10^{((Log(10)+Log(7)+Log(3))/3)}$	5.943922
July 22-28	$=10^{((Log(3)+Log(3)+Log(3))/3)}$	3

11

Also see rounding FAQ

Five-day Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)

The monthly average concentration is the arithmetic mean of all sample values measured throughout the month. Similarly, the weekly average concentration is the arithmetic mean of all samples recorded throughout a calendar week. The highest weekly average for the calendar month must be recorded on the DMR. See Appendixes B and C for the monthly average.

5

Also see rounding FAQ

In this case, the weekly Raw $CBOD_5$ averages were calculated as follows using data from Appendix B:

Period	Calculation	Weekly Average (mg/l)
July 1-7	(144+184+123)/3	150.3
July 8-14	(135+205+142)/3	160.7
July 15-21	(146+180+129)/3	151.7
July 22-28	(138+153+153)/3	148.0

6

Calculating $CBOD_5$ Loading

Calculating average weekly and monthly loading is done by dividing the total load (week or month) by the number of days in the week or month in which the sample was taken. These values are to be reported in pounds/day (lb/day). The following equations may be used to make this conversion:

Quantity (lb/day) = Flow (MGD) x conc. (mg/l) x 8.34

Monthly Average $CBOD_5$ Loading (RAW)

=((3.17*144*8.34)+(3.21*184*8.34)+(2.89*123*8.34)+(2.87*135*8.34)+(2.97*205*8.34)+(2.78*142*8.34)+(2.73*146*8.34)+(2.96*180*8.34)+(2.77*129*8.34)+(3.35*138*8.34)+(3.17*153*8.34)+(3.11*153*8.34))/12

7 =3826.3 lb/day

Period	Calculation	Weekly Average $CBOD_5$ Loading (RAW) (lb/day)
July 1-7	=((3.17*144*8.34)+(3.21*184*8.34)+(2.89*123*8.34))/3	3899.2
July 8-14	=((2.87*135*8.34)+(2.97*205*8.34)+(2.78*142*8.34))/3	3867.1
July 15-21	=((2.73*146*8.34)+(2.96*180*8.34)+(2.77*129*8.34))/3	3582.6
July 22-28	=((3.35*138*8.34)+(3.17*153*8.34)+(3.11*153*8.34))/3	3956.3 ← 8

Total Suspended Solids (TSS), Ammonia and Nitrogen quality and quantity calculations should follow the same procedures as above.

Calculating Flow

9 The **average monthly flow** is an arithmetic mean that includes all the daily flows in a given month.

10 The maximum daily flow that occurs during the month must also be recorded on the DMR.

APPENDIX B: Example DMR Data and Calculation Sheet

Example DMR Calculations

NAME OF TREATMENT PLANT _____ 1 COUNTY _____ MONTH OF: July 2008

KPDES PERMIT NUMBER PLANT CAPACITY 4.4 MGD RECEIVING STREAM

DATE	TOTAL FLOW (MILLION GALLONS)	RAW SEWAGE: GRIT REMOVED (CUBIC FEET)	RAW SEWAGE: SCREENINGS (CUBIC FEET)	pH: RAW	pH: FINAL	SETTLEABLE SOLIDS (mg/L): RAW	SETTLEABLE SOLIDS (mg/L): PRIMARY EFFLUENT	SETTLEABLE SOLIDS (mg/L): FINAL EFFLUENT	DISSOLVED OXYGEN (mg/L): STREAM ABOVE	DISSOLVED OXYGEN (mg/L): FINAL EFFLUENT	DISSOLVED OXYGEN (mg/L): STREAM BELOW	SUSPENDED SOLIDS (mg/L): RAW	SUSPENDED SOLIDS (mg/L): PRIMARY EFFLUENT	SUSPENDED SOLIDS (mg/L): FINAL EFFLUENT	5 DAY CBOD (mg/L): RAW	5 DAY CBOD (mg/L): PRIMARY EFFLUENT	5 DAY CBOD (mg/L): FINAL EFFLUENT	ACTIVATED SLUDGE: RETURN: GAL/DAY X 1000	ACTIVATED SLUDGE: RETURN: MLSS X1000	ACTIVATED SLUDGE: WASTED: MLVSS X 1000	AERATION BASIN: DISSOLVED OXYGEN (mg/L)	AERATION BASIN: MLSS (mg/L) x 1000	AERATION BASIN: MLVSS (mg/L) X 1000	AERATION BASIN: SETTLED SLUDGE VOLUME: 30 MIN.	AERATION BASIN: SETTLED SLUDGE VOLUME: 60 MIN.	SLUDGE HANDLING: RAW: GALLONS X 1000	SLUDGE HANDLING: RAW: % DRY SOLIDS	SLUDGE HANDLING: RAW: % VOLATILE SOLIDS	SLUDGE HANDLING: HAULED: % DRY SOLIDS	SLUDGE HANDLING: HAULED: % VOLATILE SOLIDS	SLUDGE HANDLING: HAULED: WITHDRAWN GALLONS X 1000	FINAL: NH3-N (mg/L)	FINAL: FECAL COLIFORM (COLONIES/100ML)	FINAL: Phosphorus mg/L	FINAL: Cadmium, Total Recoverable	FINAL: Hardness as CaCO3	FINAL: Chromium, Hexavalent	FINAL: Cyanide, Free (Amenable)	FINAL: Mercury, Total Recoverable
1	3.17	36	36	8.0	7.6	13.0		0.0		8.8		187		4	144		3	1.49	10.5	32.9	4	4.4		250							63	0.28	184						
2	3.21			7.3	7.8	11.0		0.0		8.3		194		2	184		3	2	11.42	32.9	3.8	4.865		300							31.5	0.055	25						
3	3.24			8.0		10.0		0.0										2.11	10.18	32.9	3.8	4.87		300							37.8								
4	3.38	36	36	8.0		12.0		0.0										2.17	11.54	39.4	5	5.31		300							6.3								
5	2.93			7.4		9.0		0.0										1.97	10.77	39.4	4.9	5.635		310															
6	2.89			7.6		7.0		0.0				151		3	123		3	1.91	9.14	39.4	5.2	5.45		310								0.055	10						
7	2.78			7.3	7.9	10.0		0.0		7.6								2.05	13.25	32.9	3.8	5.77		300							37.8			0.248					
8	2.87	36	36	7.3		8.0		0.0				171		3	135		3	2.05	11.66	32.9	4.6	5.475	3.52	300					2.04	68	37.8	0.055	14	0.16	0.2	222	0.01	0.01	
9	2.97			7.3	7.8	9.0		0.0		7.6		223		2	205		3	1.81	16.02	32.9	3.7	5.82		300							12.6	0.22	3	0.142					
10	2.78			7.2	7.8	10.0		0.0		7.7		218		2	142		3	1.92	12.1	32.9	3.9	5.82		300							25.2	0.055	6						
11	2.85	36	36	7.4	7.8	13.0		0.0		8.2								1.95	15.54	39.4	3.7	5.82		300							31.5								
12	2.96			7.4		7.0		0.0										2.01	13.58	32.9	5.2	6.105		330															
13	3.27			7.3		15.0		0.0										1.98	14.72	46	4.6	6.02		330															
14	2.8			7.3		15.0		0.0										1.76	13.78	39.4	4.3	6.165	4.155	350					2.21	62	37.8								
15	2.73	36	36	7.4		12.0		0.0				197		2	146		3	1.6	13.82	26.3	4.5	5.84		320							37.8	0.28	10						
16	2.96			7.3	7.7	10.0		0.0		8.0		246		2	180		3	2.06	10.54		4.9	6.365		350							56.7	0.22	7	0.181					
17	2.77			7.5	7.8	15.0		0.0		7.6		159		2	129		3	1.95	14.23	32.9	4.3	6.29		350							37.8	0.28	3						
18	2.68	36	36	7.5	7.7	14.0		0.0		7.9								1.5	12.87	32.9	4.4	5.76		320															
19	2.73			7.4		12.0		0.0										2.06	9.9	32.9	4.4	5.28		300															
20	3.22			7.5		10.0		0.0										1.84	9.9	32.9	3.9	6.635		300															
21	3.4			7.4		8.0		0.0										1.88	8.32	39.4	4.9	4.32		250							31.5								
22	3.35	36	36	7.4		10.0		0.0	1			193		2	138		3	2.04	14.47	52.6	4.4	5.92		300							44.1	0.055	3						
23	3.17			7.4	7.7	10.0		0.0				192		2	153		3	1.97	14.11	39.4		5.765	3.835	300					2.09	60	37.8	0.055	3	0.06					
24	3.11			7.6	7.7	15.0		0.0		7.2		196		2	153		3	2.05	12.82	46	4.3	5.66		300							37.8	0.055	3						
25	2.9	36	36	7.2	7.6	10.0		0.0		10.0								1.78	12.09	46	4.9	5.765		300							37.8								
26	2.75			7.5		8.0		0.0		7.8								2.03	8.96	52.6	5.1	6.145		340															
27	2.97			7.2		11.0		0.0										2.17	11.38		4.7	6.44		350															
28	3.07			7.3		9.0		0.0										2.05	13.86		4.6	6.725		400							31.5								
29	2.83	36	36	7.4		9.0		0.0										2	13.07	39.4	4.4	6.48		350							44.1								
30	3.51			7.5		9.0		0.0					4			5		1.79	13.47	39.4	4.2	6.84	4.59	400							56.7								
31	4.46			7.2		6.0		0.0										2.09	18.4	46	4	5.22		280							31.5								
Tot.	94.71	324	324															60.04													806.4								
Avg.	3.055	36	36			10.5				8.1		194		2	153		3	1.937	12.46	38.03	4.413	5.773	4.025	315.8					2.113	63.33	36.65	0.14	8	0.16	0.20	#####	0.01	0.01	

2 3 1 4 5 9 10 12

RESIDENTIAL

COMMERCIAL

INDUSTRIAL 0

INDUSTRIAL WASTE POPULATION EQUIVALENT

29097	22882	23529		7626
FLOW	CBOD	TSS	OPERATOR	CERT. NO.

TOTAL NUMBER OF SEWER CONNECTIONS 0

SEWER CONNECTIONS 0 X 4 = 0 SEWERED POPULATION

PLANT TELEPHONE

APPENDIX C: Example Completed DMR

Example DMR Page 1

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*
NAME

ADDRESS

FACILITY
LOCATION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

PERMIT NUMBER | DISCHARGE NUMBER

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	08	07	01	TO	08	07	31

Form Approved.
OMB No. 2040-0004

MAJOR
(SUBR LV)
F - FINAL
MUNICIPAL WASTEWATER
EFFLUENT
*** NO DISCHARGE |__| ***

NOTE: Read Instructions before completing this form.

pH meter could only read 2 significant digits

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
OXYGEN, DISSOLVED (DO) 00300 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	******	******		1 7.2	******	******	(19)	0	3/7	Grab
	PERMIT REQUIREMENT	******	****** ****	****	7 INST MIN	******	******	MG/L		THREE/WEEK	GRAB
PH 00400 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	******	******		2 7.6	****** 3	7.9	(12)	0	3/7	Grab
	PERMIT REQUIREMENT	******	****** ****	****	6.0 MINIMUM	******	9.0 MAXIMUM	SU		THREE/WEEK	GRAB
SOLIDS, TOTAL SUSPENDED 00530 6 0 0 RAW SEW/INFLUENT	SAMPLE MEASUREMENT	4853	5184	(26)	******	194	204	(19)	0	3/7	Comp
	PERMIT REQUIREMENT	REPORT MO AVG	REPORT MX WK AV	LBS/DY	******	REPORT MO AVG	REPORT MX WK AV	MG/L		THREE/WEEK	COMPOS
SOLIDS, TOTAL SUSPENDED 00530 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	58	77	(26)	******	2	3	(19)	0	3/7	Comp
	PERMIT REQUIREMENT	1501 MO AVG	2252 MX WK AV	LBS/DY	******	30 MO AVG	45 MX WK AV	MG/L		THREE/WEEK	COMPOS
NITROGEN, AMMONIA TOTAL (AS N) 00610 6 0 0 RAW SEW/INFLUENT	SAMPLE MEASUREMENT	502	522	(26)	******	20.0	22.0	(19)	0	3/7	Comp
	PERMIT REQUIREMENT	REPORT MO AVG	REPORT MX WK AV	LBS/DY	******	REPORT MO AVG	REPORT MX WK AV	MG/L		THREE/WEEK	COMPOS
NITROGEN, AMMONIA TOTAL (AS N) 00610 1 1 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	3	6	(26)	******	0.14	0.26	(19)	0	3/7	Comp
	PERMIT REQUIREMENT	100 MO AVG	150 MX WK AV	LBS/DY	******	2 MO AVG	3 MX WK AV	MG/L		THREE/WEEK	COMPOS
PHOSPHORUS, TOTAL (AS P) 00665 1 1 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	******	******		******	0.16	0.248	(19)	0	1/7	Comp
	PERMIT REQUIREMENT	******	****** ****	****	******	REPORT MO AVG	REPORT MX WK AV	MG/L		WEEKLY	COMPOS

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE	DATE		
	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.		AREA CODE NUMBER	YEAR	MO	DAY
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		08	08	26

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*
USE MO AVG FOR BOD/TSS REMV; REPT IN MINIMUM COLUMN.

Example DMR Page 2

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*
NAME

ADDRESS

FACILITY
LOCATION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

PERMIT NUMBER | DISCHARGE NUMBER

MONITORING PERIOD
FROM YEAR 08 MO 07 DAY 01 TO YEAR 08 MO 07 DAY 31

MAJOR
(SUBR LV)
F - FINAL
MUNICIPAL WASTEWATER
EFFLUENT
*** NO DISCHARGE | | ***

Form Approved.
OMB No. 2040-0004

NOTE: Read Instructions before completing this form.

PARAMETER		QUANTITY OR LOADING AVERAGE	QUANTITY OR LOADING MAXIMUM	UNITS	QUALITY OR CONCENTRATION MINIMUM	QUALITY OR CONCENTRATION AVERAGE	QUALITY OR CONCENTRATION MAXIMUM	UNITS	NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE MEASUREMENT	3.055	4.460	(03)	******	******	******		0	C/N	C/N
50050 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT MO AVG	REPORT DAILY MX	MGD	******	******	******	****		CONTINUOUS	CONTIN
COLIFORM, FECAL GENERAL	SAMPLE MEASUREMENT	******	******		******	8	36	(13)	0	3/7	Grab
74055 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	******	****** ****	****	******	200 30DA GEO	400 #/ 7 DA GEO	100ML		THREE/WEEK	GRAB
BOD, CARBONACEOUS 05 DAY, 20C 80082 0 0 0 RAW SEW/INFLUENT	SAMPLE MEASUREMENT	3826	3956	(26)	******	153	161	(19)	0	3/7	Comp
	PERMIT REQUIREMENT	REPORT MO AVG	REPORT MX WK AV	LBS/DY	******	REPORT MO AVG	REPORT MX WK AV	MG/L		THREE/WEEK	COMPOS
BOD, CARBONACEOUS 05 DAY, 20C 80082 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	75	80	(26)	******	3	3	(19)	0	3/7	Comp
	PERMIT REQUIREMENT	500 MO AVG	751 MX WK AV	LBS/DY	******	10 MO AVG	15 MX WK AV	MG/L		THREE/WEEK	COMPOS
BOD, CARB-5 DAY, 20 DEG C, PERCENT REMVL 80091 K 0 0 PERCENT REMOVAL	SAMPLE MEASUREMENT	******	******		98 %	******	******	(23)	0	1/31	Cal
	PERMIT REQUIREMENT	******	****** ****	****	85 MO AVG	******	******	PER-CENT		ONCE/MONTH	CALCTD
SOLIDS, SUSPENDED PERCENT REMOVAL 81011 K 0 0 PERCENT REMOVAL	SAMPLE MEASUREMENT	******	******		99%	******	******	(23)	0	1/31	Cal
	PERMIT REQUIREMENT	******	****** ****	****	85 MO AVG	******	******	PER-CENT		ONCE/MONTH	CALCTD
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE	DATE		
	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.			08	08	26
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE / NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*
USE MO AVG FOR BOD/TSS REMV; REPT IN MINIMUM COLUMN.

APPENDIX D: Address and Phone Numbers

KY Division of Water: Surface Water Permits Branch

Branch Telephone: *502-564-3410*

200 Fair Oaks Lane
Frankfort, KY 40601

Sections and Supervisors Contact Information
http://www.water.ky.gov/homepage_repository/organization.htm

- Construction and Compliance Section
- Permit Support Section
- Wet Weather Section
- Floodplain Management Section

KY Division of Water: Compliance and Technical Assistance Branch

Central Office Telephone: *502-564-3410*
Regional Offices

1508 Westen Ave., Bowling Green, KY 42104: *270-746-7475*
Allen, Barren, Butler, Edmonson, Grayson, Hart, Logan, Ohio, Simpson
2751 Campbellsville Rd., Columbia, KY 42728: *270-384-4734*
Adair, Boyle, Casey, Clinton, Cumberland, Green, LaRue, Lincoln, Marion, Metcalfe, Monroe, Nelson, Pulaski, Russell, Taylor, Washington, Wayne
8020 Veterans Memorial Dr., Suite 110, Florence, KY 41042: *859-525-4923*
Boone, Bracken, Campbell, Carroll, Gallatin, Grant, Henry, Kenton, Owen, Pendleton, Trimble
643 Teton Trail, Suite B, Frankfort, KY 40601: *502-564-3358*
Anderson, Bourbon, Clark, Estill, Fayette, Franklin, Garrard, Harrison, Jessamine, Madison, Mercer, Montgomery, Nicholas, Powell, Robertson, Scott, Woodford
233 Birch St., Suite 1, Hazard, KY 41701: *606-435-6022*
Breathitt, Floyd, Johnson, Knott, Lee, Letcher, Magoffin, Martin, Perry, Pike, Wolfe
875 South Main St., London, KY 40741: *606-330-2080*
Bell, Clay, Harlan, Jackson, Knox, Laurel, Leslie, McCreary, Owsley, Rockcastle, Whitley
9116 Leesgate Rd., Louisville, KY 40222-5084: *502-429-7122*
Breckinridge, Bullitt, Hardin, Jefferson, Meade, Oldham, Shelby, Spencer
625 Hospital Dr., Madisonville, KY 42431-1683: *270-824-7529*
Caldwell, Christian, Crittenden, Daviess, Hancock, Henderson, Hopkins,

McLean, Muhlenberg, Todd, Union, Webster
525 Hecks Plaza Dr., Morehead, KY 40351: *606-784-6634*
Bath, Boyd, Carter, Elliott, Fleming, Greenup, Lawrence, Lewis, Mason, Menifee, Morgan, Rowan
130 Eagle Nest Dr., Paducah, KY 42003: *270-898-8468*
Ballard, Calloway, Carlisle, Fulton, Graves, Hickman, Livingston, Lyon, Marshall, McCracken, Trigg

Drinking Water Compliance and Technical Assistance Section: ***502-564-3410***

Complaints Coordinator: *502-564-3410*
Submit a complaint to the Division of Water.

Division of Compliance Assistance (DCA)

Environmental Compliance Assistance Program
Telephone: *502-564-0323*
E-mail: envhelp@ky.gov
Web page: http://www.dca.ky.gov/complianceassistance/

Operator Certification Program
Telephone: *502-564-0323*
E-mail: envhelp@ky.gov
Web page: http://www.dca.ky.gov/certification/

APPENDIX F: Record of Changes

8/10/09	On page 8, an explanation was added indicting why inequalities should not be reported on the DMR form.
8/10/09	On page 8, the description for item number 10 was revised to provide additional clarification.
8/10/09	On page 11, the instructions for reporting values that are too numerous to count was changed from 99,999 to 60,000.